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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,895	09/22/2003	Takanori Kamoto	1114-190	6800

23117 7590 08/03/2005

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EXAMINER	
SHOSHO, CALLIE E	
ART UNIT	**PAPER NUMBER**
1714	

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/664,895	KAMOTO ET AL.	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/22/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 18-21 and 24-25 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n).

In accordance with MPEP § 608.01(n), due to the presence of improper multiple dependent claims, claims 18-21 and 24-25 should not be further treated on the merits. However, in the interest of "compact prosecution", claims 18-21 and 24-25 have been treated as if they were corrected to be in proper multiple dependent form, and the following rejections are given.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites an improper Markush group. It is suggested that (i) in line 2 after "one" and before "of", the phrase "selected from the group consisting of" is inserted or (ii) in line 3, "and" is changed to "or".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-10, 12-17, and 22-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. '102 (U.S. 6,773,102) taken in view of the evidence given in Faass et al. (U.S. 5,496,874) and Belmont et al. (U.S. 5,630,868).

Chen et al. '102 disclose aqueous ink jet ink comprising self-dispersing pigment, solvent such as glycol ethers and polyhydric alcohols, nonionic surfactant, and polyester that is obtained from 5-sulfoisophthalic acid salt and polyhydric alcohol such as diethylene glycol, ethylene glycol, and cyclohexanedimethanol. The pigment includes Pigment Blue 15:3, Pigment Red 122, Pigment Yellow 74, and carbon black. For specific types of self-dispersing pigment, Chen et al. '102 refers to Belmont et al. which discloses pigment with attached carboxyl or sulfonic group (col.5, lines 46-47 and 46 and col.4, lines 7-10, 25-28, and 44-46). The polyester possesses glass transition temperature of 10-80 ^{0}C. The polyester includes those known under the tradename Eastman AQ 55 which is well known, as evidenced by Faass et al. (col.6, lines 12-19), to possess number average molecular weight of 14,000-16,000. Chen et al. '102 also disclose recording method of recording images comprising depositing ink onto recording material from ink jet

printer wherein the ink jet printer uses piezo or thermal process to form the recorded image (col.2, lines 25-36 and 66-67, col.4, line 55-col.5, line 16, col.7, lien 43-col.9, line 48, col.9, lines 54-61 and 65-67, col.10, lines 16-27 and 48-65, and col.11, lines 33-50). Although there is no explicit disclosure that water present in the ink has electroconductivity of 250 μS/cm or less, given that, as seen in the examples, Chen et al. '102 uses deionized water, it is clear that the water would inherently possess electroconductivity of 250 μS/cm or less as presently claimed.

In light of the above, it is clear that Chen et al. '102 anticipate the present claims.

6. Claims 26-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. '102 (U.S. 6,773,102) taken in view of the evidence given in Nagashima (U.S. 4,625,220) and Endo et al. (U.S. 4,723,129).

Chen et al. '102 disclose aqueous ink jet ink comprising self-dispersing pigment and polyester that is obtained from 5-sulfoisophthalic acid salt and polyhydric alcohol such as diethylene glycol, ethylene glycol, and cyclohexanedimethanol. Chen et al. '102 also disclose recording method of recording images comprising depositing ink onto recording material from ink jet printer wherein the ink jet printer uses piezo or thermal process to form the recorded image (col.2, lines 25-36 and 66-67, col.4, line 55-col.5, line 16, col.7, lien 43-col.9, line 48, col.9, lines 54-61 and 65-67, col.10, lines 16-27 and 48-65, and col.11, lines 33-50).

While Chen et al. '102 disclose depositing ink onto substrate using ink jet printer utilizing piezo or thermal process, there is no explicit disclosure regarding the components of the printer. However, it is well known, as evidenced by Nagashima (col.1, lines 22-33 and col.2,

lines 26-46), that ink jet printer using piezoelectric process would inherently include ink head comprising ink tank for storing the ink, ink chamber for discharging the ink, and piezoelectric element for applying pressure to the ink in response to voltage applied using electrode. Further, it is well known, as evidenced by Endo et al. (col.1, lines 16-19 and col.14, lines 32-36), that ink jet printer using thermal process would inherently include ink head comprising ink tank, i.e. reservoir, for storing the ink, ink chamber having discharge ports for discharging the ink, heater to heat the ink and generate air bubbles, and electrodes for applying voltage.

In light of the above, it is clear that Chen et al. '102 anticipate the present claims.

7. Claims 1-6, 9-10, and 12 –25 are rejected under 35 U.S.C. 102(e) as being anticipated by Reem et al. (U.S. 6,715,869) taken in view of the evidence given in Faass et al. (U.S. 5,496,874) and Peters et al. (U.S. 5,169,881).

Reem et al. disclose ink jet ink comprising water, pigment such as Pigment Blue 15:3, Pigment Red 122, Pigment Yellow 74, and carbon black, solvent such as polyhydric alcohols and glycol ethers, nonionic surfactant, and sulfopolyester obtained from sodium sulfoisophthalic acid, diethylene glycol, and 1,4-cyclohexanedimethanol. The sulfopolyester includes those known under the tradename Eastman AQ 55 which is well known, as evidenced by Faass et al. (col.6, lines 12-19), to possess number average molecular weight of 14,000-16,000 and as evidenced by Peters et al. (col.7, lines 50-59) to possess glass transition temperature of 55 ^{0}C. There is also disclosed ink set comprising cyan, magenta, yellow, and black inks. Reem et al. also disclose recording method of recording images wherein the inks are deposited on a recording material (col.2, lines 49-52, col.7, lines 14-39, col.8, lines 13-19 and 50-59, and col.9,

lines 6-12, 20-25, and 48). Although there is no explicit disclosure that water present in the ink has electroconductivity of 250 μS/cm or less, given that, as seen in the examples, Reem et al. uses deionized water, it is clear that the water would inherently possess electroconductivity of 250 μS/cm or less as presently claimed.

In light of the above, it is clear that Reem et al. anticipate the present claims.

8. Claims 1, 4, 6, 9-10, 12, 16, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Sharma et al. '947 (U.S. 5,129,947).

Sharma et al. '947 disclose ink jet ink comprising water, colorant, polyhydric alcohol such a propylene glycol, nonionic surfactant, i.e. Surfynol, and sulfopolyester obtained from salt of 5-sulfoisophthalic acid and polyhydric alcohol such as diethylene glycol and 1,4-cyclohexanedimethanol . The pigment includes Pigment Blue 15:4. There is also disclosed recording method of recording images wherein the inks are deposited on a recording material (col.1, lines 42-66, col.2, lines 63-64, col.3, line 52-col.4, line 28, col.4, lines 54-57, col.5, line 66, and col.8, line 10).

In light of the above, it is clear that Sharma et al. '947 anticipate the present claims.

9. Claims 1-4, 6, 12, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Blount (U.S.4,990,593).

Blount discloses water, pigment such as phthalocyanine blue or carbon black, organic solvent, and sulfopolyester possessing glass transition temperature greater than 10 ^{0}C and

number average molecular weight of 1,000-5,000. It is disclosed that the sulfopolyester is obtained from difunctional sulfo monomer such as dicarboxylic acid containing SO_3M group where M is Li, Na, or K such as sodiosulfoisophthalic acid and polyhydric alcohol such as ethylene glycol, 1,3-propanediol, or 1,4-cyclohexanedimethanol (col.1, lines 10-12, col.2, lines 30-39, col.3, line 62-col.4, line 2, col.4, lines 7-16, col.5, lines 46-57, col.7, lines 1-10, col.8, lines 13-21, and col.9, lines 13-15).

In light of the above, it is clear that Blount anticipates the present claims.

10. Claims 1, 3-4, 6, 9-10, and 12-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Erdtmann et al. (U.S. 6,046,253).

Erdtmann et al. disclose ink comprising water, solvent such as glycol ethers and polyhydric alcohols, pigment such as Pigment Blue 15, Pigment Red 122, Pigment Yellow 138, and carbon black, nonionic surfactant, i.e. Surfynol, and sulfopolyester obtained from, for instance, sodium sulfoisophthalic acid, isophthalic acid, and diethylene glycol that possesses glass transition temperature of 41 ^{0}C. There is also disclosed ink set comprising cyan, magenta, yellow, and black inks. Erdtmann et al. et al. also disclose recording method of recording images comprising depositing ink onto recording material from ink jet printer wherein the ink jet printer uses piezo or thermal process to form the recorded image (col.1, lines 9-12, col.2, line 48-col.3, line 55, col.4, lines 10-15 and 38-47, col.5, lines 24-26, 30-34, and 52-57, and col.6, lines 3-11).

In light of the above, it is clear that Erdtmann et al. anticipate the present claims.

11. Claims 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Erdtmann et al. (U.S. 6,046,253) taken in view of the evidence given in Nagashima (U.S. 4,625,220) and Endo et al. (U.S. 4,723,129).

Erdtmann et al. disclose ink comprising water, pigment, and sulfopolyester obtained from, for instance, sodium sulfoisophthalic acid, isophthalic acid, and diethylene glycol. Erdtmann et al. et al. also disclose recording method of recording images comprising depositing ink onto recording material from ink jet printer wherein the ink jet printer uses piezo or thermal process to form the recorded image (col.1, lines 9-12, col.2, line 48-col.3, line 55, col.4, lines 10-15 and 38-47, col.5, lines 24-26, 30-34, and 52-57, and col.6, lines 3-11).

While Erdtmann et al. disclose depositing ink onto substrate using ink jet printer utilizing piezo or thermal process, there is no explicit disclosure regarding the components of the printer. However, it is well known, as evidenced by Nagashima (col.1, lines 22-33 and col.2, lines 26-46), that ink jet printer using piezoelectric process would inherently include ink head comprising ink tank for storing the ink, ink chamber for discharging the ink, and piezoelectric element for applying pressure to the ink in response to voltage applied using electrode. Further, it is well known, as evidenced by Endo et al. (col.1, lines 16-19 and col.14, lines 32-36), that ink jet printer using thermal process would inherently include ink head comprising ink tank, i.e. reservoir, for storing the ink, ink chamber having discharge ports for discharging the ink, heater to heat the ink and generate air bubbles, and electrodes for applying voltage.

In light of the above, it is clear that Erdtmann et al. anticipate the present claims.

12. Claims 1-6, 9-10, 12-17, and 22-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. '098 (U.S. 2003/0187098) taken in view of the evidence given in Faass et al. (U.S. 5,496,874) and Peters et al. (U.S. 5,169,881).

Chen et al. '098 disclose aqueous ink jet ink comprising pigment, solvent such as glycol ethers and polyhydric alcohols, nonionic surfactant, and water-dispersible sulfonated polyester that is obtained from dicarboxylic acid having a metal sulfonate group and polyhydric alcohol such as diethylene glycol, ethylene glycol, and 1,4-cyclohexanedimethanol. The pigment includes Pigment Blue 15:3, Pigment Red 122, Pigment Yellow 74, and carbon black. The polyester includes those known under the tradename Eastman AQ 55 which is well known, as evidenced by Faass et al. (col.6, lines 12-19), to possesses number average molecular weight of 14,000-16,000 and as evidenced by Peters et al. (col.7, lines 50-59) to possess glass transition temperature of 55 ^{0}C. Chen et al. '098 also disclose recording method of recording images comprising depositing ink onto recording material from ink jet printer wherein the ink jet printer uses piezo process to form the recorded image (paragraphs 1, 9-12, 17, 19-20, 22-23, 27, 30, 32, and 49). Although there is no explicit disclosure that water present in the ink has electroconductivity of 250 μS/cm or less, given that, as seen in the examples, Chen et al. '098 uses deionized water, it is clear that the water would inherently possess electroconductivity of 250 μS/cm or less as presently claimed.

In light of the above, it is clear that Chen et al. '098 anticipate the present claims.

13. Claims 26 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. '098 (U.S. 2003/0187098) taken in view of the evidence given in Nagashima (U.S. 4,625,220).

Chen et al. '098 disclose aqueous ink jet ink comprising pigment and water-dispersible sulfonated polyester that is obtained from dicarboxylic acid having a metal sulfonate group and polyhydric alcohol such as diethylene glycol, ethylene glycol, and 1,4-cyclohexanedimethanol. Chen et al. '098 also disclose recording method of recording images comprising depositing ink onto recording material from ink jet printer wherein the ink jet printer uses piezo process to form the recorded image (paragraphs 1, 9-12, 17, 19-20, 22-23, 27, 30, 32, and 49).

While Chen et al. '098 disclose depositing ink onto substrate using ink jet printer utilizing piezo process, there is no explicit disclosure regarding the components of the printer. However, it is well known, as evidenced by Nagashima (col.1, lines 22-33 and col.2, lines 26-46), that ink jet printer using piezoelectric process would inherently include ink head comprising ink tank for storing the ink, ink chamber for discharging the ink, and piezoelectric element for applying pressure to the ink in response to voltage applied using electrode.

In light of the above, it is clear that Chen et al. '098 anticipate the present claims.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Erdtmann et al. (U.S. 6,046,253) in view of Meyrick et al. (U.S. 6,344,497).

The disclosure with respect to Erdtmann et al. in paragraph 10 above is incorporated here by reference.

The difference between Erdtmann et al. and the present claimed invention is the requirement in the claims of the number average molecular weight of the sulfopolyester.

Meyrick et al., which is drawn to ink jet inks, disclose the use of sulfonated polyester possessing number average molecular weight of up to 30,000 in order to produce ink with good storage stability (col.5, lines 14-23).

In light of the motivation for using sulfopolyester with specific molecular weight disclosed by Meyrick et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use sulfopolyester with such molecular weight in the ink of Erdtmann et al. in order to produce ink with good storage stability, and thereby arrive at the claimed invention.

17. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al. '947 (U.S. 5,129,947) in view of Sorriero et al. (U.S. 5,716,436).

The disclosure with respect to Sharma et al. '947 in paragraph 8 above is incorporated here by reference.

The difference between Sharma et al. '947 and the present claimed invention is the requirement in the claims of the number average molecular weight and glass transition temperature of the sulfopolyester.

Sorriero et al., which is drawn to ink jet inks, disclose the use of water-dispersible polyester comprising aromatic dicarboxylic acid with sulfonate group wherein the polyester possesses molecular weight of 740-8,000 and glass transition temperature of 10-80 ^{0}C in order to produce ink with improved water fastness, abrasion resistance, and image quality (col.1, lines 41-47).

In light of the motivation for using sulfopolyester with specific molecular weight and glass transition temperature disclosed by Sorriero et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use sulfopolyester with such molecular weight and glass transition temperature in the ink of Sharma et al. '947 in order to produce ink with improved water fastness, abrasion resistance, and image quality, and thereby arrive at the claimed invention.

18. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al. '947 (U.S. 5,129,947), Blount (U.S. 4,990,593), or Erdtmann et al. (U.S. 6,046,253) any of which in view of Sharma et al. '883 (U.S. 5,464,883).

The disclosures with respect to Sharma et al. '947, Blount, and Erdtmann et al. in paragraphs 8, 9, and 10, respectively, are incorporated here by reference.

The difference between Sharma et al. '947 , Blount, or Erdtmann et al. and the present claimed invention is the requirement in the claim that the water present in the ink have electroconductivity of 250 μS/cm or less.

Sharma et al. '883, which is drawn to aqueous ink jet ink comprising sulfopolyester, disclose using deionized water that possesses no ions in order to prevent precipitation of the sulfopolyester (col.4, lines 54-57). It is clear that such deionized water would intrinsically possess electroconductivity of 250 μS/cm or less.

In light of the motivation for using deionized water disclosed by Sharma et al. '883 as described above, it therefore would have been obvious to one of ordinary skill in the art to use

deionized water in the ink of Sharma et al. '947, Blount, or Erdtmann et al. in order to prevent precipitation of the sulfopolyester, and thereby arrive at the claimed invention.

19. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reem et al. (U.S. 6,715,869), Sharma et al. '947 (U.S. 5,129,947), Blount (U.S. 4,990,593), Erdtmann et al. (U.S. 6,046,253), or Chen et al. '098 (U.S. 2003/0187098) any of which in view of Johnson et al. (U.S. 5,922,118).

The disclosures with respect to Reem et al., Sharma et al. '947, Blount, Erdtmann et al., and Chen et al. '098 in paragraphs 7, 8, 9, 10, and 12, respectively, are incorporated here by reference.

The difference between Reem et al., Sharma et al. '947, Blount, Erdtmann et al., or Chen et al. '098 and the present claimed invention is the requirement in the claims of pigment that has hydrophilic group.

Johnson et al. disclose the use of colored pigment having attached ionic group including carboxyl or sulfonic group wherein the pigment is carbon black or organic pigment. The motivation for using such hydrophilic pigment is to produce ink with improved optical density that has decreased intercolor bleed (col.1, lines 14-16, col.2, lines 54-65, col.4, lines 34-40 and 49-66, col.6, line 50-col.7, line 20, col.10, lines 47-59, and col.11, line 61-col.12, line 7).

In light of the motivation for using hydrophilic pigment disclosed by Johnson et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Reem et al., Sharma et al. '947, Blount, Erdtmann et al., or Chen et al.

'098 in order to produce ink with improved optical density and decreased intercolor bleed, and thereby arrive at the claimed invention.

20. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. '102 (U.S. 6,773,102), Reem et al. (U.S. 6,715,869), Sharma et al. '947 (U.S. 5,129,947), Blount (U.S. 4,990,593), Erdtmann et al. (U.S. 6,046,253), or Chen et al. '098 (U.S. 2003/0187098) any of which in view of Koitabashi et al. (U.S. 6,454,402).

The disclosures with respect to Chen et al. '102, Reem et al., Sharma et al. '947, Blount, Erdtmann et al., and Chen et al. '098 in paragraphs 5, 7, 8, 9, 10, and 12, respectively, are incorporated here by reference.

The difference between Chen et al. '102, Reem et al., Sharma et al. '947, Blount, Erdtmann et al., or Chen et al. '098 and the present claimed invention is the requirement in the claim of that the nonionic surfactant is present in amount of critical micelle concentration or more.

Each of Chen et al. '102, Reem et al., Sharma et al. '947, Blount, Erdtmann et al., and Chen et al. '098 disclose nonionic surfactant.

Koitabashi et al., which is drawn to ink jet ink, disclose using nonionic surfactant in amount equal to or more than the critical micelle concentration in order to produce ink with high fixability to paper (col.7, lines 31-39).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use nonionic surfactant in amount equal to or more than the critical micelle concentration

in Chen et al. '102, Reem et al., Sharma et al. '947, Blount, Erdtmann et al., or Chen et al. '098 in order to produce ink with high fixability to paper, and thereby arrive at the claimed invention.

21. Claims 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reem et al. (U.S. 6,715,869) and Sharma et al. '947 (U.S. 5,129,947) either of which in view of Endo et al. (U.S. 4,723,129)

The disclosures with respect to Reem et al. and Sharma et al. '947 in paragraphs 7 and 8 above are incorporated here by reference.

The difference between Reem et al. or Sharma et al. '947 and the present claimed invention is the requirement in the claims of specific ink jet printer.

Reem et al. and Sharma et al. '947 each disclose depositing ink onto substrate to form recorded image, however, there is no specific disclosure in either reference of specific printer to perform the printing.

Endo et al. disclose ink jet printer using thermal process wherein the printer includes ink head comprising ink tank, i.e. reservoir, for storing the ink, ink chamber having discharge ports for discharging the ink, heater to heat the ink and generate air bubbles, and electrodes for applying voltage (col.1, lines 16-19 and col.14, lines 32-36). The motivation for using such printer is to provide clear image without satellite dots or background fog (col.3, lines 30-32).

In light of the motivation for using thermal ink jet printer disclosed by Endo et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use thermal printer as the printer in either Reem et al. or Sharma et al. '947 in order to provide clear image without satellite dots or background fog, and thereby arrive at the claimed invention.

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Walker et al. (U.S. 6,530,986) disclose ink set wherein the inks comprise pigment and sulfonated polyester as presently claimed.

Yamanouchi et al. (U.S. 6,800,673) disclose ink set wherein the inks comprise sulfopolyester and dye.

Campbell et al. (U.S. 2003/0027893) and McCovick et al. (U.S. 2004/0110865) each disclose ink comprising sulfonated polyester as presently claimed.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
7/29/05